

# USE CASE

## SURFACE INSPECTION OF PROTEIN FILTERS



### CLIENT/INDUSTRY BACKGROUND

The client is an international pharmaceutical and laboratory equipment manufacture and supplier. One of the products they supply is protein filters.

These filters are designed to filter a wide range of Pharmaceutical products.

### PROBLEMS

- Contamination of the membrane caused by impurity or foreign material particles during the manufacturing process results in improper filtration of liquid used for medical purposes. These defects are so minute and easily being missed out in the inspection.
- The filters having defects like tears, spots, holes, smudges, etc. The size of these defects is as small as 0.5mm causes the inspection heavily time-consuming.

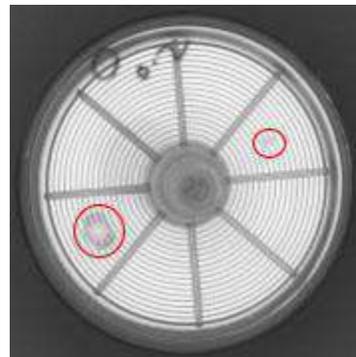
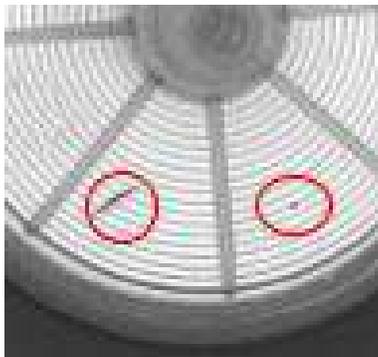
## PROBLEM IMPLICATIONS

- Improper filtration leads to excess leakage of unwanted impurities, which is not acceptable and potentially caused loss of production resulting in financial losses and delays in shipments
- Customer dissatisfaction due to defective product and its impact has the potential of loss of business and damage to brand reputation

## CLIENT REQUIREMENT

To automate the process of surface defects identification with the help of machine vision to achieve high accuracy in defect identification and reduce inspection time significantly.

### DEFECTS



## CURRENT PROCESS

The defects are being inspected by operators.

- More than 5 operators are deployed for inspection

## BUSINESS IMPACT

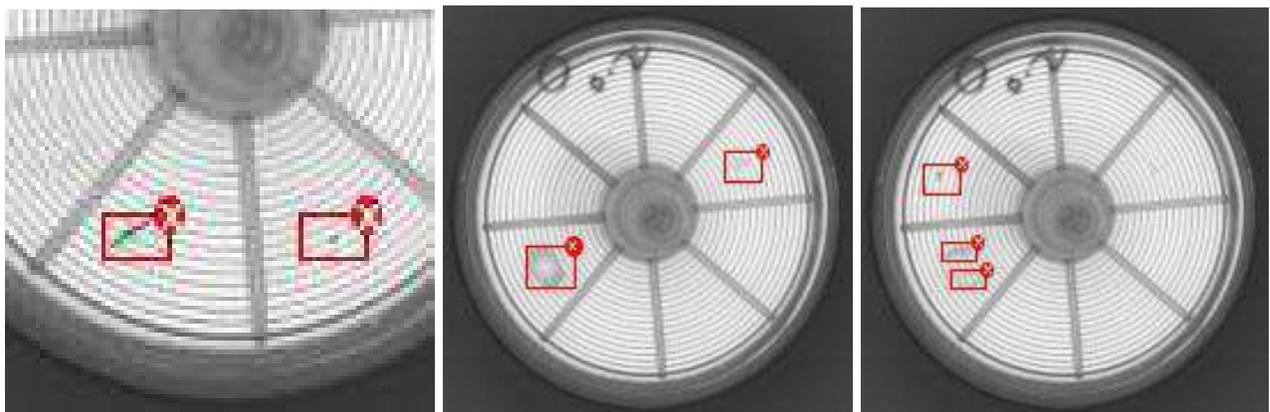
1. Increase in cost of quality (COQ)
2. Increased cost for additional labor and training
3. Loss of opportunities and business volume
4. Negative Impact on margin and profitability

## SOLUTION USING MACHINE VISION AND AI

A camera or set of cameras with appropriate illumination(backlights in this case) is set up to identify the defects on the filters. Images are captured and sent to the software (Qualitas EagleEye® Platform) cloud where the training is done using DL algorithms. Once the program is trained, real-time defect detection takes place, based on which the results are sent to PLC to take action.

## IMAGES

QEP(QUALITAS EAGLE-EYE® PLATFORM)ANNOTATED IMAGES



## CONCLUSION

POC(Proof Of Concept) is conducted and the following conclusion was observed:

1. Increased the accuracy rate of defect identification up to 97 percent.
2. The time to inspect each filter is reduced to 1 second
3. Observed a total reduction in labor skill development cost



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